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CURRENT LITERATURE IN AGRICULTURAL ENGINEERING

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ENGINEERING

Vol. 3, No. 5.

WASHINGTON, D. C.

December, 1933.

Agricultural Engineering.

Engineers help farmers to reduce production costs. By S. H. McCrory. Penn State Farmer. v. 27, no. 1. October, 1933. p. 6-7, 9. It is work of Bureau of Agricultural Engineering, by research studies in application of engineering principles, to help farmer get greatest return from small investments. Some of its major studies at present include economical use of water in irrigation, control of soil erosion, economical use of farm power and machinery, and control of certain insect pests. It is also function of Bureau to develop construction methods and study materials that will produce better and cheaper buildings for housing farmer's family and livestock and for storage of crops.

Farmer has regained confidence in the future. B. F. B. Nichols. Printers' Ink. v. 164, no. 13. September 28, 1933. p. 3-4, 6, 95.

Relationship between engineering and home economics. By Grace L. Pennock. Agricultural Engineering. v. 14, no. 11. November, 1933. p. 299-301, 308. Agricultural engineer is trying to make work conditions and equipment better for farmer in order that farmer may increase income, lessen physical fatigue, and in end have richer, happier, more satisfactory life. Agricultural engineer has been one of first of group of engineers to be interested in problems of home.

Agriculture.

Agricultural adjustment. By Charles J. Brand. American Fertilizer. v. 79, no. 3. July 29, 1933. p. 8-9, 22. Continued from July 15 issue.

Agricultural outlook for 1932. 1933. 110p. U. S. Department of Agriculture. Miscellaneous Publication no. 182.

Farm management study of crop production practices. By P. G. Minneman and E. B. Hill. 1933. 58p. Michigan. Agricultural Experiment Station. Special bulletin no. 241. Labor, power, equipment, and materials used in crop production in southeastern Michigan, 1930-31.

Farm systems in northwest Wisconsin. By D. R. Mitchell and P.E. McNall. 1933. 40p. Wisconsin. Agricultural Experiment Station. Bulletin no. 426. Shows farm plans and practices of those dairy farmers in northwestern Wisconsin who are making their farms pay.

Agriculture. (Cont'd)

Farmer and the new deal. By F. D. Farrell. Successful Farming. v. 31, no. 12. December, 1933. p. 8-9, 25. If new deal for agriculture succeeds, it will mark end of era of extreme individualism on American farm.

Handbook of the agricultural experiment stations in temperate countries: Editorial. Experiment Station Record. v. 69, no. 4. October, 1933. p. 481-482. Undertaken by International Institute of Agriculture at Rome.

How to calculate field areas. By Ray W. Carpenter and C. E. Wise, Jr., 1933. 12-. University of Maryland. Extension service. Circular no. 102.

How to save time, save money and make profits in farming and homemaking. Successful Farming, 1933. 72p.

Local prices of farm products in Nebraska, 1895-1932. By H. C. Tilley and Arthur M. Hauke. 1933. 38p. Nebraska. Agricultural Experiment Station. Bulletin no. 284.

New credit system for farmers. By Dan A. Wallace. Farmer. v. 51, no. 22. October 28, 1933. p. 3, 22.

Ohio Agricultural statistics, 1932. 1933. 54p. Ohio. Agricultural Experiment Station. Bulletin no. 530.

Planning the farm for greater efficiency. By N. A. Kessler. Agricultural Engineering News Letter. University of Minnesota. no. 20. November 15, 1933. p. 1.

"Progress on all fronts" under the farm act. By George N. Peck. 1933. 9p. U.S. Department of Agriculture Agricultural Adjustment Administration.

Air Conditioning.

Aerodynamic aspects of air conditioning. By S. M. Anderson. Refrigerating Engineering. v. 26, no. 4. October, 1933. p. 181-184, 205. Fan characteristics classified; choosing the proper fan.

Air conditioning - reference list of air filters. Heating and Ventilating. v. 50, no. 10. October, 1933. p. 17-21.

Air conditioning at Fair attracts attention of builders. American Builder. v. 55, no. 5. August, 1933. p. 24-25, 50. Complete cooling for homes still impractical in moderate price range.

Complete automatic temperature control in a modern residence. By R. P. Dewey. Heating and Ventilating. v. 30, no. 10. October, 1933. p. 36-39. Heating system controls; automatic burner control; Two-temperature thermostats; Program switch; Humidifier controls; Unit heater controls.

Air conditioning. (Cont'd)

Fundamental principles of climatizing. By W. Koeniger. Aero-logist. v.9, no. 12. December, 1933. p. 6-7, 21. Review of principal features of design and installation of climate plants for homes and public rooms.

Fundamental principles of climatizing. By W. Koeniger. Aero-logist. v. 9, no. 11. November, 1933. p. 5-8, 22. Survey of scientific principles affecting design of climate plants for homes and public rooms.

Heat from electric lights is important in heating and cooling problems. Heating and Ventilating. v. 30, no. 10. October, 1933. p. 40-41. Abstract of paper by Walter Sturrock and J. H. Walker before Illuminating Engineering Society, August 1933.

Study of summer cooling in the research residence for the summer of 1933. By A. P. Kratz and S. Konzo. Heating, Piping and Air Conditioning. v.5, no. 12. December, 1933. p. 613-625. Method of conducting tests; Results of tests; Effect of methods of night operation on conditions next day; Circulation of outdoor air at night as a supplement to ice cooling.

Summarize cooling data now! By Andre Merle. Domestic Engineering. v. 142, no. 4. October, 1933. p. 72-78. Complete and informative article on design, installation and operation of air conditioning equipment.

Alcohol.

Bureau of Standards issues alky-gas test report. National Petroleum News. v. 25, no. 45. November 8, 1933. p. 34. In substance main conclusion reached by Bureau is that if weather is not too hot and if user of car is not interested in quick get away, there is little difference in fuel economy between regular gasoline and more expensive blend.

Apples.

Costs and returns in producing apples in the Newfane-Olcott area, Niagara County, New York, 1926 to 1928. By T. E. LaMont. 1933. 87p. Cornell University. Agricultural Experiment Station. Bulletin no. 565.

Associations.

Are Associations prepared to pay the price? By C. B. Larrabee. Printers' Ink. v. 163, no. 8. May 25, 1933. p. 17-19. Government partnership has splendid sound, but co-operative groups must guard against dropping important activities.

Meeting program of A.S.A.E. Power and machinery division, December 4, 5 and 6, 1933. Agricultural Engineering. v. 14, no. 11. November, 1933. p. 322. Also program of farm structures division.

Building Construction.

Building construction modification. By S. R. Lewis. Aero-logist. v.9, no. 12. December, 1933. p. 16-19. Table give conductivities and conductances of building materials and insulations.

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Building Construction. (Cont'd)

Building construction study. By Samuel R. Lewis. Aero-logist. v. 9, no. 11. November, 1933. p. 16-19.

How public works money can be obtained for building projects. Domestic Engineering. v. 142, no. 4. October, 1933. p. 36-37.

Stucco-Interior plastering and Graffito. N.Y., Atlas. Portland Cement Company. 1926. 35p.

Concrete.

Proposed system for the analysis and field control of fresh concrete. By W. W. Dunagan. 1933. 63p. Iowa. Engineering Experiment Station. Bulletin no. 113. Result of attempt to coordinate many tests now made of concrete and concrete materials during course of concrete construction. This system is arranged so that conditions, definitions and apparatus applicable in course of materials proportioning apply equally well to analysis of mixed concrete before hardening.

Corrosion.

Steel in sea water examined after 31 years' exposure. By J. S. Unger. Engineering News Record. v. 111, no. 20. November 16, 1933. p. 593-594. Metal loss from corrosion and abrasion on 6-in. solid circular piles is confined to tidal range and is relatively small in amount.

Cotton.

Economical diesel power in cotton gin installations. By F.A. Westbrook. Southern Power Journal. v. 51, no. 12. December, 1933. p. 32.

Four things for farmers to do to aid quality of cotton. Cotton Ginners' Journal. v. 4, no. 12. September, 1933. p. 7, 18. 1. Dry cotton before it is ginned, or take it to gin that has mechanical drier. 2. keep trash out of cotton. 3. Don't market dirty cotton. 4. Insist on ginning practices and methods that produce quality cotton.

Cultivation.

New system of land cultivation. Implement and Machinery Review. v. 59, no. 702. October 1, 1933. p. 478-481. How the "Polo Pardi" method is applied. Editorial, p. 473.

Culverts.

Notes on the hydraulics of culverts. By Glen L. Mercer. Colorado Engineer. v. 30, no. 1. November, 1933. p. 8-9, 23-24. Deals only with discharge capacities of culverts, and omits all discussion of determining quantity of storm flow.

Partition walls of culverts designed as brush collectors. Engineering News-Record. v. 111, no. 22. November 30, 1933. p. 648.

Dairy Farm Management.

Efficiency studies in dairy farming. By H. C. Woodworth and others. 1933. 54p. New Hampshire. Agricultural Experiment Station. Bulletin no. 275.

Drainage.

Distribution of drainage water from milking barns. By H. B. Walker and H.L. Belton. Agricultural Engineering. v. 14, no. 11. November, 1933. p. 309-311.

Driers.

Small food drier can be easily made. Idaho Farmer. v. 51, no. 20. p. 6. September 7, 1933. 2 x 4-inch frame is boarded up and made tight with dry shiplap. Door is made full size to allow trays to be readily inserted and removed. It is made to fit tight by means of $\frac{1}{4}$ x $\frac{1}{2}$ -inch weather strip. Trays are 30 x 30 inches, made of 2 x $\frac{1}{2}$ -inches material. Bottoms are made of laths, leaving $\frac{1}{4}$ -inch spaces between each. They are covered inside on bottoms with cheesecloth. Tray supports are of two-piece construction. Larger piece is 1 x 1 inch, and smaller strip is 1 x $\frac{1}{2}$ -inch thick. This construction allows room for air to come up along sides and move in over tray tops. Damper inserted in stovepipe between furnace and elbow is closed and sheet iron cover of furnace is removed when smoking is being done. Adjustable cover for vent allows user to regulate opening for smoking or drying. Furnace rests on ground.

Electric Service Rural.

Five-point program for the electrification of America. By David E. Lilienthal. 1933. 8p. Mimeographed. Tennessee Valley Authority. Press release.

Electricity on the Farm.

Electric heat for curing and storing sweet potatoes. By E. T. Swink. Agricultural Engineering. v. 14, no. 11. November, 1933. p. 305-306.

Farm electrification steadily winning. By George W. Kable. Electrical World. v. 102, no. 19. November 4, 1933. p. 605. Five manufacturers disposed of 350,000 ft. of soil heating cable between May 1, 1932, and May 1, 1933. This is sufficient cable for 5,500 6 x 6 ft. hotbeds. Approximately 2,000 thermostats were sold to control heating of these beds. New type of latent steam boiler has been developed for dairy use. Consists essentially of well insulated electric water heater from which quantities of live steam can be drawn after period of automatic heat accumulation. Boiler will provide both superheated water and steam and is particularly adapted to regions where flat rates for water heating are in vogue. Two new developments in wiring - non-metallic sheath cable for farm use and bare neutral wire.

Engineering.

Engineering foundation. By Alfred D. Flinn. Science. v. 78, no. 2028. November 10, 1933. p. 424-428. Objectives and policies; Organization and administration; Resources; Examples of Activities; Research incidents; Collaboration.

Engineering. (Cont'd)

Program for the profession. By Dexter S. Kimball. Engineering News-Record. v. 111, no. 21. November 23, 1933. p. 617-619. Current movements to restrict practice tend to affect technical societies and colleges as well as the public. Is restriction or regulation the better course? Some challenging questions.

Recent developments in engineering registration. By T. Keith Legare. Engineering News-Record. v. 111, no. 21. November 23, 1933. p. 619-621. Twenty-seven states now have some form of registration law for engineers. Uniformity promoted by the National Council of Engineering Examiners.

Engines.

Researches on internal-combustion engine. By C. F. Taylor. Mechanical Engineering. v. 55, no. 11. November, 1933. p. 689-691. Equipment and projects at Massachusetts Institute of Technology; fuel-injection systems; engine indicators; thermodynamic problems; cooling research; mixture-preparation studies.

Erosion Control.

Erosion is of two types. By W. A. Rockie. Oregon Farmer. v. 56, no. 24. November 2, 1933. p. 2. Both wind and water attack Pacific northwest soils.

Flood and erosion control as possible unemployment relief measures. By L. E. Freudenthal. Science. v. 78, no. 2029. November 17, 1933. p. 445-449.

Inexpensive methods of gully control. By Ivan D. Wood. 1933. 16p. Nebraska Agricultural College. Extension Service. Extension Circular no. 741.

Keeping farms from washing away. By H. B. Roe. Farmer. v. 51, no. 20. September 30, 1933. p. 5. What can be done by terracing and cover cropping.

Soil erosion problem in New Jersey. By Linwood L. Lee. Journal of the American Society of Agronomy. v. 25, no. 10. October, 1933. p. 652-660.

Soil erosion service plans large-scale operations. Engineering News-Record. v. 111, no. 22. November 30, 1933. p. 644. Erosion Service now is selecting ten or eleven watersheds of 200,000 to 300,000 acres each in various parts of country where soil erosion is major problem. With co-operation of land-owners in such areas, variety of practical control measures, both vegetative and mechanical, will be applied according to their adaptability to conditions. Where mechanical methods are suggested vegetative covering also will be applied to provide full stability. Combination of engineering, forestry and cropping practices will be employed in establishing definite plan of land use based on peculiar requirements of soil, topography, rainfall and type of agricul-

Erosion Control. (Cont'd)

ture in each area. Areas selected are representative of diverse conditions under which soil erosion has already acted. In addition to regular appropriations, allotments of \$57,750 have been made to date by Public Works Administration for continuing erosion-control experimental work of Engineering Bureau headed by S. H. McCrory, and Bureau of Chemistry and Soils. Bureau of Plant Industry has received allotment of \$630,000 to establish nine erosion-control nurseries for propagating trees, bushes, plants and grasses adapted to checking progress of soil erosion.

Evaporation.

Evaporation from water surfaces. Symposium. American Society of Civil Engineers. Proceedings. v. 59, no. 9. November, 1933. p. 1441-1443. Discussion by J.W. Pritchett.

Extension.

Agricultural Engineering Extension work in Pennsylvania. By John R. Haswell. Penn State Farmer. v. 27, no. 1. October, 1933. p. 8. Farm sanitation. Water supply. Field drainage. Rural electrification. Buildings. Farm machinery.

Fans, Mechanical.

Industrial fan drives offer power - saving possibilities. By Robert W. Drake. Heating, Piping and Air Conditioning. v. 5, no. 12. December, 1933. p. 595-597. Advantages to be gained by occasional changes in fan speed.

Modern fan units offer economical replacement in existing installations. By C. M. Kent. Southern Power Journal. v. 51, no. 12. December, 1933. p. 30-31.

Farm Machinery and Equipment.

Chart showing acres covered per hour with different width of implements at various speeds. Traction Farming. v. 18, nos. 3 and 4. November-December, 1933. p. 7.

Current factors in farm implement prices. By H. G. Davis. Implement Record. v. 30, no. 12. December, 1933. p. 8-9. Significant facts, figures and factors that affect current implement prices.

Longer life for farm machinery. By Martin Chandler. Farm and Ranch. v. 52, no. 19. October 1, 1933. p. 11. One of greatest sources of preventable loss on farm is deterioration of costly implements and machines exposed to weather. United States Department of Agriculture reports from experiments that life of grain drill when housed properly is 14 years, but is reduced to only $6\frac{1}{2}$ years when not housed. Service period of either hay loader or manure spreader is reduced 50 per cent if either implement is stored outdoors when not in use. Good farm wagon if housed when idle will last 22 years. Shelter it in shade of tree or in lee of barn and it is ready for junk pile in 8 years. Working life of wooden parts of farm machinery could be increased at least one-fourth - where such implements

Farm Machinery and Equipment. (Cont'd)

are exposed to weathering - by painting every second year. Special acid-resisting paint should be used on manure spreader. Fertilizer box of grain-drill is exposed to corrosive action and should be painted once a year, unless that container be made of sheet iron.

Mechanization in the cane fields. International Sugar Journal. v.35, no. 416. August, 1933. p. 300-304. General survey; Power unit; Implements of cultivation; Harvesting machinery; Planting machines.

New combine for small farms. Wisconsin Agriculturist and Farmer. v. 60, no. 16. August 5, 1933. p. 6. Built by Allis-Chalmers Company, especially for use on farms of average grain acreage.

New trash guide for clean plowing. Agricultural Engineering. v. 14, no. 11. November, 1933. p. 315. Invented by L. G. Schoenleber and A. H. Graves, agricultural engineers of the U.S.D.A. Bureau of Agricultural Engineering, for use in plowing, and particularly valuable for control of European corn borer. Guides may be attached to either horse or tractor-drawn plows and to equipment of one or more plow bottoms. Guide is made of sheet metal usually about 1/16-inch thick. This is bent to form U-shaped loop, slightly conical, and acts as funnel for guiding standing stalks into furrow bottom in such manner that furrow slice as it is turned over covers them completely. One trash guide is attached to each plow bottom. Right-hand side of front guide is pivoted to collar on outer end of front axle. Right-hand side of second and subsequent guides is pivoted to bracket attached to adjacent plow bottom brace. Left-hand side of guides are pivoted to brackets which are clamped to colter shanks. Tops of guides are connected by chains or wires to lever which raises devices automatically when plow for any reason is pulled out of ground or is backed up. Lifting the guides protects them from damage.

Fertilizers.

Test of floats as fertilizer and a study of the influence of farm manure on their effectiveness. By T. L. Lyon. 1933. 18p. Cornell University. Agricultural Experiment Station. Bulletin no. 574.

Floors.

How to maintain floors. By H. L. Schultz. Part II. Factory Management and Maintenance. v. 91, no. 3. May, 1933. p. 199-202.

Flow of Water and Gases.

Pressure losses of one fluid as a criterion of the pressure losses for any fluid. By H. J. Macintire and Gene Edwards. Refrigerating Engineering. v. 26, no. 4. October, 1933. p. 185-189. Dimensional analysis. Exponential law of resistance. Establishment of theory. Application of method. Conclusions: 1. General equation of fluid flow may be used in accurately determining pressure losses for any fluid flowing in given pipe provided that experimental constant "k" and exponent of velocity, particular to pipe in question, are known. 2. Practice of assuming that velocity varies as square instead of using actual expon-

Flow of Water and Gases. (Cont'd)

ent, in calculating friction factor, is quite misleading. It would be better to use value "n" in calculations and to plot loss of head against velocity. Different pipes could be represented by different slopes, and various kinematical viscosities could be represented by lines parallel to given slopes.

Separate roughness coefficients for channel bottom and sides. By Robert E. Horton. Engineering News-Record. v. 111, no. 22. November 30, 1933. p. 652-653. When the bottom and sides of an open channel are of different degrees of roughness, the equivalent coefficient for the channel as a whole varies with the depth of flow.

Variable flow of fluids. By Grant K. Palsgrove and William J. Moreland, Jr., 1933. 27p. Rensselaer Polytechnic Institute. Engineering and Science series. Bulletin no. 44.

Forests.

Cultivating the farm forest. By R. P. Heldsworth. 1933. 12p. Massachusetts State College. Extension Service. Extension leaflet no. 147.

Forestry and farm income. By Wilbur R. Mattoon. Revised 1933. 33p. U.S. Department of Agriculture. Farmers' Bulletin no. 1117.

Fuels.

New combustion chart solves fuel problems for gasoline, coal and natural gas. By Eric Therkelsen. Part II. Power. v. 77, no. 12. December, 1933. p. 652-653.

Thermal properties of petroleum products. 1933. 48p. U.S. Bureau of Standards. Miscellaneous Publication no. 97.

Greenhouses.

Greenhouses for a small purse. American Home. v. 10, no. 3. August, 1933. p. 120-121, 149-150.

Heating.

Heat output of concealed radiators at various temperatures. By E. A. Allcut. University of Toronto. School of Engineering Research. Bulletin no. 9. 1932. p. 27-60.

Heating equipment for small houses. By Theo. F. Rockwell. Architectural Record. v. 74, no. 4. October, 1933. p. 393-407. Scope; Trends in architecture; available equipment for various income groups; Advantages and disadvantages of various types of residence heating systems; Humidifiers; Mechanical ventilation.

Method of cleaning radiators. By G. D. Winans. Heating, Piping and Air Conditioning. v. 5, no. 12. December, 1933. p. 607-608.

Horses.

- Farm horse. Washington, 1933. 84p. U.S. Bureau of the Census.
Horses and mules in relationship to type of farm; Replacement of horses and mules by machinery; Effects of machinery on acreage and production of crops and livestock; Effects of decrease of horses and mules on specified crops, classes of livestock, and plowable pasture; Resume of trend in number and value of horses and mules and outlook for future.
- More horses on farm, advertising opens new markets. By Charles F. Mains. Printers' Ink. v. 163, no. 7. May 18, 1933. p. 6, 8.
- Scarcity of work animals may become alarming. By Frank A. Briggs. Farm and Ranch. v. 52, no. 18. September 15, 1933. p. 1. Demand cannot be supplied by present prospects.

Hotbeds, Electric

- Electrical heating in the garden. Sunbyberg, Sweden, Sieverts Cable Works, 1931. 19p.

Houses.

- Cellular steel-unit house. By C. Matlack Price. Architectural Record. v. 74, no. 4. October, 1933. p. 249-251, 313. System involves prefabrication of steel structural unit in convenient modular sizes of which entire shell of house is welded together. Cellular construction automatically provides conduits for air conditioning, including heating, refrigeration and humidification, and for electric wiring and plumbing.
- Colonial domestic architecture of the seventeenth and eighteenth centuries in Canada and the United States. By E. S. S. Armitage-Stanley. University of Toronto. School of Engineering Research. Bulletin no. 9. 1932. p. 79-127.
- Home architecture. By Roxford Newcomb and Willian A. Foster. N.Y., John Wiley and Sons, Inc., 1932. 336p. Designed primarily as textbook in home architecture, but aims to serve also as manual for home builder and home owner.
- Housing the workers at Norris dam. By Earle S. Draper. 1933. 4p. Mineographed. Tennessee Valley Authority, Washington, D. C.
- There's a new deal for home comfort. By Daniel D. Merrill. American Home. v. 10, no. 4. September, 1933. p. 173-175, 191, 194.

Insulation.

- Discussion of some of the principles of acoustical insulation. By V. L. Chrisler. 1933. 12p. U.S. Bureau of Standards Circular no. 403.
- Let it blow! By Edwin R. Steel, Jr., Better Homes and Gardens. v. 11, no. 12. August, 1933. p. 20-21. Heat loss can be cut from 20 to 50 percent, and many colds prevented by weatherstripping your windows and doors.

Insulation. (Cont'd)

Red flannels! By Edwin R. Steel, Jr. Better Homes and Gardens. v. 12, no. 1. September, 1933. p. 18-19, 42-43. Explanation of major classifications into which home insulators fall.

Irrigation.

Central Valley water project. California Cultivator. v. 80, no. 25, November 11, 1925. p. 499, 507.

Irrigated pasture shows real profit. Oregon Farmer. v. 56, no. 23. October 19, 1933. p. 2. To rent such pasture would cost \$3. per cow and \$1.50 per heifer per month, or \$270. for (30) cows and \$67.50 for (15) yearling heifers, total of \$337.50. Without irrigation this pasture would have carried only heifers, and cows would have required at least \$720. worth of dry feed. Costs charged against irrigation are as follows:

\$600.00 pipe at 10% interest and depreciation - -	\$ 60.00
115.00 pump at 15% interest and depreciation - -	17.20
87.50 motor at 10% interest and depreciation - -	8.75
35.00 line at 15% interest and depreciation - -	5.25
<u>\$837.50</u>	<u>\$ 91.20</u>
Labor, 22 days at \$2. - - - - -	44.00
Power, 1473 kwh. at 1.8 - - - - -	26.75
	<u>\$ 70.75</u>

Grand Total - - - - - \$161.95

Irrigation congress tackles big problem. Idaho Farmer. v. 51, no. 20, September 7, 1933. p. 16. Federal Irrigation Congress, composed of settler representatives from reclamation projects in nine western states, appealed for fair consideration in allotment of public works funds. Congress made inventory of money needed by various districts to put their projects in efficient working order. Other recommendations for land reclassification and revision of contracts were drawn up and will be presented in united endorsement before congress and reclamation bureau.

Irrigation increases yields in Willamette. Oregon Farmer. v. 56, no. 23. October 19, 1933. p. 9. Claims that irrigation would double production of Willamette valley farms.

Irrigation projects in State of Utah get P.W.A. loan. Engineering News-Record. v. 111, no. 21. November 23, 1933. p. 636. Three irrigation projects in Utah were allotted total of \$4,500,000 by Public Works Administration. Deer Creek-Utah Lake project received allotment of \$2,700,000. Project is located on branch of Provo River and provides for construction of reservoir to augment water supply of Salt Lake Valley. Total cost of project will be \$9,974,000. It is considered necessary in order to preserve one of most highly developed and valuable agricultural districts in Utah. Moon Lake project received \$1,500,000 for construction of storage reservoir utilizing natural lake, to provide supplemental water supply to land near Myton and Roosevelt. Allotment of \$300,000 was made to Scipeto project for construction of two diversion tunnels.

Irrigation. (Cont'd)

Irrigation requirements of the arid and semiarid lands of the Pacific slope basins, 1933. 70p. U.S. Department of Agriculture. Technical bulletin no. 379.

Verde river development work: letter from Louis H. Shoemaker. Engineering News-Record. v. lll, no. 21. November 23, 1933. p. 630-631. Concise statement of facts regarding Verde River irrigation and power project.

Land.

Cost of clearing land on Minnesota farms. By M. J. Thompson, L. H. Schoenleber and N. A. Kessler. 1933. 28p. Purpose of study has been to determine cost of clearing stump and stone land in cut-over section of Minnesota: 1. In terms of units of labor and material per acre; 2. on types of soil of potential crop value (sand, sandy loam, clay loam, clay); 3. Following certain types of timber cover, usually associated with distinctive types of soil; 4. Under headings - brushing, stumping, breaking, picking stones and roots; 5. Where owner does work himself under supervision of university. Minn. Agr. Exp. Station. Bulletin no.299.

For better use of Kansas land. Kansas Farmer. v. 71, no. 21. November 5, 1933. p. 10. Adopted by land use conference. 1. Complete adequate inventory of land resources. 2. Secure wider use of farming practices that will conserve soil fertility and avoid soil erosion. 3. Adopt credit policies and practices, both private and governmental, which will promote effective use of land. 4. Establish taxation systems and practices which will encourage conservation of land leases that will make possible effective land use. 6. Promote types of farming that will result in most effective use of land. 7. Definitely relate land use to demand for Kansas products. 8. Develop and support transportation systems. 9. Develop farm woodlots and shelter belts and, where practicable, reestablish grass. 10. Conserve fish and game. 11. Utilize land for recreational purposes. 12. Direct all land use policies and practices toward development of satisfying life.

Local governmental control in land utilization and forestry. By F.G. Wilson and F.B. Tronk. Journal of Forestry. v. 31, no. 7. November, 1933. p. 796-806. Deals with control of use of lands in private ownership by application of new principle in land zoning.

Utilization of land from which cotton has been removed. By C. E. Brohm. Extension Service Review. v. 4, no. 6. October, 1933. p. 85-86. It is important that acres be prevented from erosion loss and from uncontrolled development of noxious weeds. Stress should be placed on growing of soil-improvement crops.

What of the withheld acreage? Implement and Tractor Trade Journal. v. 48, no. 24. December 2, 1933. p. 8, 15. Summer fallowing, incentive to diversification and adoption of new crop programs will create markets for greater variety of equipment in single crop areas.

Lubrication.

General information for refiners of petroleum regarding the tests of lubricating oils at the Engineering Experiment Station, Annapolis, Maryland. Washington. Government Printing Office, 1932. 15p.

Lubrication. (Cont'd)

Proceedings of the seventh oil power conference of the Pennsylvania State College and the second National lubrication engineering meeting, under the joint auspices of the Pennsylvania State college and the Lubrication engineering committee of the Petroleum division, American Society of Mechanical Engineers, State College, Pa., May 25-26, 1933. 1933. 173p. Pennsylvania State College. School of Engineering. Technical bulletin no. 18. Practical interpretation of lubricant specification, by J. G. O'Neill. Machine design for lubrication, by E. M. Barber and C.C. Davonport. Roll neck lubrication, by Walter D. Hodson. Viscosity classification for industrial lubricants, by A. E. Becker. Application of extreme pressure lubricants to the lubrication of machinery, by Oscar C. Bridgeman. Problems of lubricating heavy duty gears, by Austin Kuhns. Lubrication of wire rope, by A. J. Morgan. Friction of wire rope in sheaves, by L. M. Tichirnsky. Some practical factors affecting design and operation of bearings for large rotating apparatus by T. W. Gordon.

Meters.

Flow meters control heating system. By G. D. Turner. Power. v. 77, no. 12. December, 1933. p. 639-640.

River gages improved with Public-works fund. Engineering News-Record. v. 111, no. 23. December 7, 1933. p. 686. Immediate replacement removes all need for expensive and unsatisfactory tinkering with about 200 gages which are practically beyond repair.

Miscellaneous.

A.S.M.E. papers at New York meeting reflect technical progress in engineering. Power Plant Engineering. v. 37, no. 12. December, 1933. p. 532-537. Abstracts of number of technical papers to be presented at annual meeting of American Society of Mechanical Engineers to be held in New York, December 4-8.

Buying for the household as practiced by 368 farm families in New York, 1928-29. By Marion Fish. 1933. 92p. Cornell University. Agricultural Experiment Station. Bulletin no. 561.

Handy andy on the farm. By T. C. Richardson. Farm and Ranch. v. 52, no. 20. October 15, 1933. p. 1, 9. Repairs on farm.

Is the rubber dollar coming? By Dr. G. F. Warren. Printers' Ink. v. 165, no. 5. October 19, 1933. p. 48-49, 52. Present revolutions and political upheavals in world are direct and indirect results of breakdown in medium of exchange. If such monetary system continues, every investor, farmer, home-owner, and businessman should give first attention to probable supplies of and demand for gold, before he considers details of his business.

Machine age benefits upheld; Better distribution demanded. Science News Letter. v. 24, no. 655. October 28, 1933. p. 284. Editorial taken from Engineering and Mining Journal. It is society that must change and not that machine must be abolished. It is machine that will ultimately make men free from drudgery and give them time to think. Mankind must see to it that production and benefits of machine are properly distributed.

Miscellaneous. (Cont'd)

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Rubber dollars and Dr. Warren. By Wheeler McMillen. Printers' Ink. v. 165, no. 4. October 26, 1933. p. 61, 64. Abstracted from article in Country Home, issued during week of October 22, 1933.

Study of weather bureau reported to science board. 1933. 15p. Mimeographed. Preliminary report. Science advisory board acts under jurisdiction of National Academy of Sciences and National Research Council.

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Mississippi River.

Channel regulation for the Mississippi. By P. Claxton. Engineering News Record. v. 111, no. 20. November 16, 1933. p. 584-585. Discussion of bed load, bank erosion, cutoffs and branch closure as involved in new plans for Mississippi flood control.

Surface water supply of the United States, 1932. Part 7, Lower Mississippi. river basin. 1933. 132p. U. S. Geological Survey. Water-supply paper 732.

Oils.

Effect of sludge on engine oil performance. By D. B. Barnard. National Petroleum News. v. 25, no. 37. September 13, 1933. p. 27-28, 30, 32, 33.

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Costs and returns in producing potatoes in New York in 1929. By F. L. Underwood. 1933. 122p. Cornell University. Agricultural Experiment Station. Bulletin no. 568.

Poultry Houses, and Equipment.

Brooder house with circular roof. By Arthur E. Shafer. Farm Journal. v. 57, no. 12. December, 1933. p. 11.

Electric water heaters for poultry. By James B. Store. Penn State Farmer. v. 27, no. 1. October, 1933. p. 10, 13. Table gives laboratory data and results on electric water heater.

Homemade brick brooder. By D. S. Weaver and C.F. Parrish. 1932. 2p. Mimeographed. North Carolina. Agricultural Extension Service. Agronomy information Circular no. 76.

Poultry Houses and Equipment. (Cont'd)

Underfloor heat for poultry houses. By M. Wayne Miller, Fenton F. Smith, and C. A. Svinth. 1933. 8p. Washington. State College. Extension Service. Poultry Pointers. no. 13.

Power.

Cost of farm power. By Harry G. Davis. Farm Journal. v. 57, no. 12. December, 1933. When power plants are duplicated costs can't help increasing.

More tractor hours mean lower costs. Farm and Ranch. v. 32, no. 18. September 15, 1933. p. 10.

Planning for farm efficiency. By N. A. Kessler. Implement and Tractor Trade Journal. v. 48, no. 24. December 2, 1933. p. 10. Type of power not so important, but duplication is to be avoided, and with machinery must be adjusted to farm needs.

Utilization and cost of power on corn belt farms. By L. A. Reynoldson and others. 1933. 60p. U.S. Department of Agriculture. Technical bulletin no. 384.

Public Works.

Decentralized Civil Works program to supplement PWA. Engineering News-Record. v. 111, no. 21. November 23, 1933. p. 629-630. All work is to be done on day-labor plan. Operating and maintenance work excluded. CWA will pay PWA wage rates. Semi-skilled rates not fixed as yet.

ECW and CCC. By C.M. Granger. Journal of Forestry. v. 31, no. 7. November, 1933. p. 759-765. Straight-forward account of undertaking and appraisal of it.

Rain and Rainfall.

Rainfall and runoff. By A.B. Ballantyne. Arizona Producer. v. 12, no. 16. November 1, 1933. p. 10. Study of precipitation records leads Arizona investigator to surprising conclusions.

Refrigeration.

Cold storage of apples. By W. J. Williams. Ice and Cold Storage. v. 36, no. 427. October, 1933. p. 177-178, 174. Conditions necessary for successful marketing.

Construction and operation of mechanical refrigerators for farms. By James R. Tavernetti. 1933. 35p. California Agricultural Experiment Station Circular no. 329.

Cooling milk on the farm. By C. K. Johns. 1933. 28p. Canada. Department of Agriculture. Bulletin no. 165 n.s.

Dry ice strengthens ice box against electric refrigerator. Science News Letter. v. 24, no. 655. October 28, 1933. p. 285. Smaller storage chamber for refrigerant; smaller quantities of ice can be handled easier because they are dry.

Refrigeration.

Use of ice in curing pork on the farm. By J. C. Grimes, W. E. Sewell and G. J. Cottier, 1932. 8p. Alabama Agricultural Experiment Station. Circular no. 62.

Utility refrigerators for farm use. By James R. Tavernetti. Agricultural Engineering. v. 14, no. 11. November, 1933. p. 302-304. Name "utility refrigerator" has been arbitrarily selected to mean one in which farmer may store relatively large quantities of food for home consumption, either grown on farm or purchased, and in which he may also store limited quantity of products until ready for market. Prime requisites for efficient cabinet are as follows: 1. Good lumber. 2. Good insulation. 3. Proper air circulation. 4. Good doors. 5. Ease in cleaning. 6. Careful workmanship.

Research.

Activities of the research department. Farm Implement News. v. 54, no. 23. November 9, 1933. p. 31-33. As reported to N.A.F.E.M. Convention by Harry G. Davis, Director of Research.

Silos.

Barns, fires and windstorms - and an economical new way to store hay. Nebraska Farmer. v. 75, no. 24. November 25, 1933. p. 6. Metal, cylindrical, silo-like structure for storing hay. Container is filled by running fresh, green hay through ensilage cutter. Its particular feature is inner ventilating system making it possible to store hay that is very green and moist, thus preserving all leaves, color, and natural aroma of hay.

Type of laboratory silo and its use with crotalaria. By W. Neal and R. B. Becker. Journal of Agricultural Research. v. 47, no. 8. October 15, 1933. p. 617-625.

Soils.

Character of the peat deposits of New York. By B. D. Wilson and E.V. Staker. 1933. 20p. Cornell University Agricultural Experiment Station. Memoir. no. 149.

Standardization.

Division of trade standards. By I. J. Fairchild. Industrial Standardization. v. 4, no. 11. November, 1933. p. 189-191. Work of the Division of Trade Standards and its underlying philosophy; effect of N.R.A. on production of quality standards.

Piping standardization. Materials specifications. Materials specifications. By Sabin Crocker. Heating, Piping and Air Conditioning. v. 5, no. 12. December, 1933. p. 599-602.

Position of the A.S.A. in the standardization movement. By Howard Conley. Industrial Standardization. v. 4, no. 11. November, 1933. p. 182-184. Set-up of A.S.A. enables it to continue work transferred from Bureau; preparation for transfer already under way.

Standardization. (Cont'd)

Relationship of the Government to standardization activities. By Daniel C. Roper. Industrial Standardization. v. 4, no. 11. November, 1933. p. 181-182. Government should not do what industry can do for itself; program of cooperation needs to be worked out.

Storage.

Desirable methods of handling and storing potatoes. By Ora Smith. American Potato Journal. v. 10, no. 9. September, 1933. p. 176-183. Effect of prestorage temperature and humidity on shrinkage and decay losses during subsequent storage; Effect of mechanical injuries in harvesting on the loss in weight and decay of potatoes; Recommendations for storage management.

Sweet potatoes. By M. F. Wharton and Fred Draper. Arizona Producer. v. 12, no. 17. November 15, 1933. p. 3. Curing and storing are important. House is best but pit will do in some places.

Value of ice in reducing fall temperatures in an air-cooled apple storage in southern Indiana. By Clarence E. Baker and I.D. Mayer. 1933. 16p. Purdue University. Agricultural Experiment Station. Bulletin no. 379.

Tires.

Demonstrations of pneumatic tyres for tractors. Journal of the Ministry of Agriculture. v. 40, no. 7. October, 1933. p. 582-585.

New speed factor in farming. Implement and Tractor Trade Journal. v. 48, no. 23. November 18, 1933. p. 13, 18. Low pressure tires promise possibilities for expediting field operations without increasing expenditure of power.

One year's progress on rubber. Farm Implement News. v. 54, no. 23. November 9, 1933. p. 20, 25-27.

Traction, tires and tracks. By A. W. Clyde. Penn State Farmer. v. 27, no. 1. October, 1933. p. 9. Main losses are as follows: 1. Friction in transmission gears and shafts. 2. Power needed to propel tractor. 3. Slippage. Table shows distribution of power in typical tractors.

Year of tractors on rubber. Implement and Tractor Trade Journal. v. 48, no. 23. November 18, 1933. p. 14-15. New vista of greater speed and economy in agriculture with new type of traction being unfolded.

Tractors.

Charcoal gas for tractors. Implement and Machinery Review. v. 59, no. 702. October 1, 1933. p. 484. In one case it is claimed that, by use of Hart Hill water gas plant, ample tractor power can be obtained from charcoal and water at cost of approximately 4s. per day, against present outlay of 20s. per day for paraffin fuel for same class of work. Many experiments with different types of gas generators applied to tractor engines have been carried out at Polytechnic School, Munich, Germany, and these have shown, that ordinary internal-combustion engine constructed to work on liquid fuel gives relatively lower output when fuelled by coal gas.

1. The first part of the paper discusses the importance of the study.

2. The second part of the paper discusses the methodology used in the study.

3. The third part of the paper discusses the results of the study.

4. The fourth part of the paper discusses the conclusions of the study.

5. The fifth part of the paper discusses the implications of the study.

6. The sixth part of the paper discusses the limitations of the study.

7. The seventh part of the paper discusses the future research.

8. The eighth part of the paper discusses the acknowledgments.

9. The ninth part of the paper discusses the references.

10. The tenth part of the paper discusses the appendices.

Tractors. (Cont'd)

Present day tractor well engineered. By Louis Jacobi. *Agricultural Engineering*. v. 14, no. 11. November, 1933. p. 307-308. Engineer has produced machine that proved and will prove again its economic advantage over animal power, machine that has lifted immense burdens of labor from farmer's shoulder, but it is machine that is not as yet flexible enough for general utility. There are still too many reasons offered by user why horses must be kept, in addition to owning tractor. We do not know now whether ultimate combination of horse and tractor will be best solution, but we do know that tractor in function of replacing draft animals must be such that it can be hitched to implement just as readily and just as quickly as can horse.

Trucks.

Statistics of motor truck operation in Iowa. By Robley Winfrey. 1933. 72p. Iowa Engineering Experiment Station. Bulletin no. 114. Analyses of Iowa Motor Truck registrations, 1925 to 1932, are given, showing year model, capacity, weight, tire equipment, new truck sales, and retirement from service. Mileage, operating cost, average load, and other data have been used in estimating total operating cost of trucks from $\frac{1}{2}$ to 5 ton capacity for mileages from 2,000 to 50,000 a year. Summaries are given to show gasoline consumption.

Water supply.

Nebraska's water supply. *Nebraska Farmer*. v. 75, no. 23. November 11, 1933. p. 16. Platte River water - total amount, amounts on surface and underground, where it goes in dry seasons, where it comes from in flood seasons, who has first right to its use - is now subject of no small amount of speculation and investigation.

Surface water supply of the United States, 1932. Part 9, Colorado River Basin. 1933. 137p. U.S. Geological Survey Water Supply Paper. no. 734.

To vote on water plan: Editorial. *California Cultivator*. v. 80, no. 23. October 14, 1933. p. 450. Act provides for expenditure of \$170,000,000 for construction of dam on Sacramento River at Kennett, Shasta County, to store flood waters of that river, surplus to be used to relieve water shortage in lower San Joaquin Valley, through stopping down of streams from north to south, with Sacramento River surplus taking place of that moved from upper section of valley. Project, however, is only to be

commenced when sufficient electric power, to be generated at Kennett dam, is contracted for to guarantee interest and to create sinking fund sufficient to repay total cost of project. Question is not one of developing new production at expense of taxpayers, or of robbing one group to provide for another, but rather that of lending the state's credit to project that will conserve what is now being wasted and doing no one any good, and giving it to those farmers who must eventually abandon their farms if this wasted water is not made available to them.

Welding.

Pipe welding technique and fabrication. *Heating and Ventilating*. v. 30, no. 10. October, 1933. p. 15-17.

Wells.

Economic design of wells and pumping plants. By M. R. Lewis. Agricultural Engineering. v. 14, no. 11. November, 1933. p. 312-315. Drainage wells; Factors affecting cost of water; Effect of diameter of well; Effect of cost of pumps on economical diameter; Effect of draw-down on cost of water; Effect of interference of two or more wells; Safe yield of ground water; Planned development.

Well-plugging program saves irrigation water. Engineering News Record. v. 111, no. 20. November 16, 1933. p. 598-599. Old leaking wells in Roswell artesian base in New Mexico have been constant source of water loss. Situation outlined and plugging method described. State program wins support of water users.

Wood.

Hundred definitions pertaining to wood and other forest products. Technical Note. Forest Products Laboratory. no. 240. October, 1933.

Shrinkage table for softwood lumber. Technical Note. Forest Products Laboratory. no. 241. October, 1933.

Wood Preservation.

Stop - those destructive termites. Building Material Digest. v. 2, no. 11. November, 1933. p. 8-9.

221

122